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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,571	05/20/2004	Weidong Zhu	UMBC-0015	6579
34610	7590	04/12/2006	EXAMINER	
FLESHNER & KIM, LLP P.O. BOX 221200 CHANTILLY, VA 20153			NGHIEM, MICHAEL P	
			ART UNIT	PAPER NUMBER

2863

DATE MAILED: 04/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/849,571

Applicant(s)

ZHU ET AL.

Examiner

Michael P. Nghiem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) 11-14 and 32-35 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15 and 16 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 8, 17, 23, 24, 26-31, 36 and 41-44 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 9, 10, 18-22, 25, 37-40, 45 and 46 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Claims 11-14 and 32-35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Inventions II and III, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on March 28, 2006.

Applicant's election with traverse of Invention I, claims 1-10, 15-31, and 36-46 in the reply filed on March 28, 2006 is acknowledged. The traversal is on the ground(s) that the inventions are sufficiently related that a thorough search for the subject matter of each of the designated inventions would encompass a search for the subject matter of the remaining designated inventions. This is not found persuasive because each of the inventions has acquired a separate status in the art in view of their different classification as discussed in the restriction requirement filed on March 20, 2006.

The requirement is still deemed proper and is therefore made FINAL.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction

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of the following is required: claim 22, "said sensor comprises a velocimeter" is not described in the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 7, 8, 17, 23, 24, 26, 27, 36, and 41-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Weiss et al. (US 2003/0013541).

Regarding claims 1, 7, 17, 36, and 41, Weiss et al. discloses a system (Fig. 19) for determining stiffness parameters of a structure (shaft 110, paragraph 0057), comprising:

- a sensor (1877) arranged to measure vibrations of said structure and output vibration information (paragraph 0116, lines 1-2);
- a stiffness parameter unit (61) for receiving said vibration information (paragraph 0116, lines 1-3), determining natural frequency data or mode shape (vibration frequency, paragraph 0116, lines 4-5; paragraph 0016, lines 6-8) of said structure (paragraph 0116, lines 2-5), and determining the stiffness parameters of said

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structure using said natural frequency or mode shape data (paragraph 0116, lines 4-5; paragraph 0016, lines 6-8).

Regarding claims 2 and 42, Weiss et al. discloses multiple sensors arranged to measure vibrations of said structure and output vibration information (claim 53, lines 13-16).

Regarding claims 3, 7, and 43, Weiss et al. discloses that said stiffness parameter unit comprises an iterative processing unit (paragraph 0099, lines 10-12, loop in Fig. 17).

Regarding claims 4, 8, and 44, Weiss et al. discloses that said stiffness parameter unit comprises an outer iterative processing unit (loop from 171 to 1706, 1709 and back, Fig. 17) and an inner iterative processing unit (nested loop from 1703, 1704, and 1706).

Regarding claim 23, Weiss et al. discloses that said sensor is attached to said structure (Fig. 19).

Regarding claim 24, Weiss et al. discloses that said sensor is not attached to said structure (Fig. 27).

Regarding claim 26, Weiss et al. discloses that said structure comprises a beam (beam of 110, Fig. 19).

Regarding claim 27, Weiss et al. discloses that said structure comprises a truss (110 is secured, Fig. 19).

Regarding claim 36, Weiss et al. further discloses a random impact device for inducing vibrations in said structure (paragraph 0051, lines 6-8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiss et al..

Weiss discloses all the claimed limitations as discussed above except the longest dimension of the structure being less than 1.5 meters, 2.5 meters, 10 meters, or 50 meters.

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However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the length of the shaft of Weiss et al. with the claimed limits for the purpose of finding the proper golf club length since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Allowable Subject Matter

Claims 5, 6, 9, 10, 18-22, 25, 37-40, 45, and 46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 15 and 16 are allowed.

Reasons For Allowance

The **combination** as claimed wherein said iterative processing unit determines said stiffness parameters using a first order perturbation process (claims 5, 9, 45) or said iterative processing unit determines said stiffness parameters using a higher order perturbation process (claims 6, 10, 46) or a damage information processor for receiving

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said stiffness parameters and outputting damage information (claims 15, 18) or said sensor comprises a velocimeter (claim 22) or said stiffness parameter unit further comprises a spectral analyzer (claim 25) or the random impact device comprises: a random signal generating unit for generating first and second outputs; a random impact actuator for receiving said first and second outputs; and an impact applicator coupled to said random impact actuator and having an impact region; wherein said random impact actuator drives said impact applicator such that the force and arrival times of said impact applicator at said impact region are random (claim 37) is not disclosed, suggested, or made obvious by the prior art of record.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Huang (US 6,192,758) discloses a method for determining the location of structure damage to a bridge structure (Abstract, lines 1-2).

Franklin et al. (US 4,926,691) discloses a method for determining stiffness on a wooden structure (Abstract, lines 1-2).

Contact Information

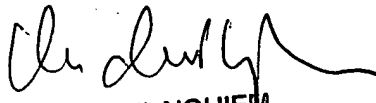
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Nghiem whose telephone number is (571) 272-

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2277. The examiner can normally be reached on M-H.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



MICHAEL NGHIEM
PRIMARY EXAMINER

Michael Nghiem

April 7, 2006